CHAPTER 21 – Design Standard Decisions

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CHAPTER 21 – Design Standard Decisions

ARTICLE 1 Introduction and Definitions

Introduction

Headquarters Division of Design (DOD) establishes and supports the consistent application of highway design standards (in accordance with the *Highway Design Manual*) to ensure optimal safety for the traveling public and those who work to construct, operate, and maintain the State Highway System.

The design standard decision document (previously known as a design exception fact sheet or fact sheet) is used to document engineering decisions made regarding a proposed design that deviates from the design standards in the *Highway Design Manual*. Additional documentation on what standards are used for a particular project is accomplished with the project approval document or with a memorandum to file placed in the project history file. Documentation of the engineering decisions that support the safe operation of the highway is necessary for Caltrans to maintain design immunity. Adequate records must be prepared and preserved to document decisions and approvals.

The registered civil engineer in responsible charge of the work (as defined by *California Business and Professions Code*, Section 6703), or other licensed professional practicing within the scope of their license, must identify both existing nonstandard features and proposed nonstandard design features. Determination of the nonstandard features should be initiated early in the project development process.

Definitions

Design standard – the geometric and engineering standard used in highway design as outlined in *Highway Design Manual*, Topic 82 "Application of Design Standards."

Design standard decision document – the name of and format used to document engineering decisions made regarding a proposed design that deviates from the design standards in the *Highway Design Manual*. Deviation from the design standard is

commonly called a design exception by the Federal Highway Administration (FHWA).

Design standards risk assessment – is a list of design standards that will likely not be met for each alternative and the probability of approval for each potential deviation from a design standard. An example of the design standards risk assessment format can be seen in the project report template associated with Appendix K – Preparation Guidelines for Project Report.

Geometrically feasible – means project alternatives are designed in accordance with the *Highway Design Manual* and specifically, alternatives meet the standards in the *Highway Design Manual* related to geometric design or have an approved design standard decision document for features that deviate from the design standards.

ARTICLE 2 Laws

The federal requirements for design standards discussed in this article are the foundation of the design standards that Caltrans uses, which make up the *Highway Design Manual*.

Federal Laws

Title 23 Code of Federal Regulations, Chapter 1 Federal Highway Administration, Department of Transportation, Subchapter G – Engineering and Traffic Operations, Part 625-Design Standards for Highways

Section 625.1, Purpose states:

> To designate those standards, policies, and standard specifications that are acceptable to the Federal Highway Administration (FHWA) for application in the geometric and structural design of highways.

Section 625.2, Policy states:

> (a) Plans and specifications for proposed National Highway System (NHS) projects shall provide for a facility that will—
>
> (1) Adequately serve the existing and planned future traffic of the highway in a manner that is conducive to safety, durability, and economy of maintenance; and

(2) Be designed and constructed in accordance with criteria best suited to accomplish the objectives described in paragraph (a)(1) of this section and to conform to the particular needs of each locality.

(b) Resurfacing, restoration, and rehabilitation (RRR) projects, other than those on the Interstate system and other freeways, shall be constructed in accordance with standards which preserve and extend the service life of highways and enhance highway safety. Resurfacing, restoration, and rehabilitation work includes placement of additional surface material and/or other work necessary to return an existing roadway, including shoulders, bridges, the roadside, and appurtenances to a condition of structural or functional adequacy.

(c) An important goal of the FHWA is to provide the highest practical and feasible level of safety for people and property associated with the Nation's highway transportation systems and to reduce highway hazards and the resulting number and severity of accidents on all the Nation's highways.

Section 625.3, Application states:

(a) Applicable Standards. (1) Design and construction standards for new construction, reconstruction, resurfacing (except for maintenance resurfacing), restoration, or rehabilitation of a highway on the NHS (other than a highway also on the Interstate System or other freeway) shall be those approved by the Secretary in cooperation with the State highway departments. These standards may take into account, in addition to the criteria described in §625.2(a), the following:

(i) The constructed and natural environment of the area;

(ii) The environmental, scenic, aesthetic, historic, community, and preservation impacts of the activity; and

(iii) Access for other modes of transportation.

(2) Federal-aid projects not on the NHS are to be designed, constructed, operated, and maintained in accordance with State laws, regulations, directives, safety standards, design standards, and construction standards.

(b) The standards, policies, and standard specifications cited in §625.4 of this part contain specific criteria and controls for the design of NHS projects. Deviations from specific minimum values therein are to be handled in accordance with procedures in paragraph (f) of this section. If there is a conflict between criteria in the documents enumerated in §625.4 of this part, the latest listed standard, policy, or standard specification will govern.

(c) Application of FHWA regulations, although cited in §625.4 of this part as standards, policies, and standard specifications, shall be as set forth therein.

(d) This regulation establishes Federal standards for work on the NHS regardless of funding source.

(e) The Division Administrator shall determine the applicability of the roadway geometric design standards to traffic engineering, safety, and preventive maintenance projects which include very minor or no roadway work. Formal findings of applicability are expected only as needed to resolve controversies.

(f) Exceptions. (1) Approval within the delegated authority provided by FHWA Order M1100.1A may be given on a project basis to designs which do not conform to the minimum criteria as set forth in the standards, policies, and standard specifications for:

(i) Experimental features on projects; and

(ii) Projects where conditions warrant that exceptions be made.

(2) The determination to approve a project design that does not conform to the minimum criteria is to be made only after due consideration is given to all project conditions such as maximum service and safety benefits for the dollar invested, compatibility with adjacent sections of roadway and the probable time before reconstruction of the section due to increased traffic demands or changed conditions.

Section 625.3, Standards, Policies, and Standard Specifications states:

The documents listed in this section are incorporated by reference with the approval of the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51 and are on file at the Office of the Federal Register in Washington, DC. They are available as noted in paragraph (d) of this section. The other CFR references listed in this section are included for cross-reference purposes only.

(a) Roadway and appurtenances. (1) A Policy on Geometric Design of Highways and Streets, AASHTO, 2011 (incorporated by reference; see §625.4(d)).

(2) A Policy on Design Standards Interstate System, AASHTO, January 2005 (incorporated by reference; see §625.4(d)).

(3) The geometric design standards for resurfacing, restoration, and rehabilitation (RRR) projects on NHS highways other than freeways shall be the procedures and the design or design criteria established for individual projects, groups of projects, or all non-freeway RRR projects in a State, and as approved by the FHWA. The other geometric design standards in this section do not apply to RRR projects on NHS highways other than freeways, except as adopted on an individual State basis. The RRR design standards shall

reflect the consideration of the traffic, safety, economic, physical, community, and environmental needs of the projects.

(4) Location and Hydraulic Design of Encroachments on Flood Plains, refer to 23 CFR part 650, subpart A.

(5) Procedures for Abatement of Highway Traffic Noise and Construction Noise, refer to 23 CFR part 772.

(6) Accommodation of Utilities, refer to 23 CFR part 645, subpart B.

(7) Pavement Design, refer to 23 CFR part 626.

(b) Bridges and structures. (1) For existing bridges originally designed to any edition of the AASHTO Standard Specifications for Highway Bridges, modifications may be designed to the Standard Specifications for Highway Bridges, 17th Edition, AASHTO, 2002 (incorporated by reference; see §625.4(d)), or to the standards and specifications that are listed in §625.4(b).

(2) AASHTO LRFD Bridge Construction Specifications, 3rd Edition, AASHTO, 2010, with 2010, 2011, 2012, and 2014 Interim Revisions (incorporated by reference; see §625.4(d)).

(3) AASHTO LRFD Bridge Design Specifications, 7th Edition, AASHTO, 2014, with 2015 Interim Revisions (incorporated by reference; see §625.4(d)).

(4) AASHTO LRFD Movable Highway Bridge Design Specifications, 2nd Edition, AASHTO, 2007, including 2008, 2010, 2011, 2012, 2014, and 2015 Interim Revisions (incorporated by reference; see §625.4(d)).

(5) AASHTO/AWS D1.5M/D1.5: 2010 Bridge Welding Code, 6th Edition, AASHTO, 2011, with 2011 and 2012 Interim Revisions (incorporated by reference; see §625.4(d)).

(6) D1.4/D1.4M: 2011Structural Welding Code-Reinforcing Steel, American Welding Society, 2011 (incorporated by reference; see §625.4(d)).

(7) Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition, AASHTO, 2013 (incorporated by reference; see §625.4(d)).

(8) Navigational Clearances for Bridges, refer to 23 CFR part 650, subpart H.

(c) Materials. (1) General Materials Requirements, refer to 23 CFR part 635, subpart D.

(2) Standard Specifications for Transportation Materials and Methods of Sampling and Testing, parts I and II, AASHTO 1995. [See §625.4(d)(1)]

(3) Sampling and Testing of Materials and Construction, refer to 23 CFR part 637, subpart B.

(d) Documents incorporated by reference. The Director of the Federal Register approves the incorporation by reference of the documents listed in this section in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. The documents listed in this paragraph are incorporated by reference and available for inspection at the U.S. Department of Transportation's National Transportation Library at 1200 New Jersey Avenue SE., Washington, DC 20590; (800) 853-1351. The documents also are available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html. Copies of these documents may be obtained from the following organizations:

(1) American Association of State Highway and Transportation Officials (AASHTO), Suite 249, 444 North Capitol Street NW., Washington, DC 20001; www.transportation.org; or (202) 624-5800.

(i) A Policy on Geometric Design of Highways and Streets, 6th Edition, 2011.

(ii) A Policy on Design Standards Interstate System, January 2005.

(iii) Standard Specifications for Highway Bridges, 17th Edition, 2002

(iv) AASHTO LRFD Bridge Construction Specifications, 3rd Edition, 2010; with:

(A) Interim Revisions, 2010,

(B) Interim Revisions, 2011,

(C) Interim Revisions, 2012, and

(D) Interim Revisions, 2014.

(v) AASHTO LRFD Bridge Design Specifications, 7th Edition, 2014, with:

(A) 2015 Interim Revisions.

(B) [Reserved]

(vi) AASHTO LRFD Movable Highway Bridge Design Specifications, 2nd Edition, 2007, with:

(A) Interim Revisions, 2008,

(B) Interim Revisions, 2010,

(C) Interim Revisions, 2011,

(D) Interim Revisions, 2012,

(E) Interim Revisions, 2014, and

(F) Interim Revisions, 2015.

(vii) AASHTO/AWS D1.5M/D1.5: 2010 Bridge Welding Code, 6th Edition, 2010, with:

(A) Interim Revisions, 2011, and

(B) Interim Revisions, 2012.

(viii) Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition, AASHTO 2013.

(2) American Welding Society (AWS), 8869 NW 36 Street, #130 Miami, FL 33166-6672; www.aws.org; or (800) 443-9353 or (305) 443-9353.

(i) D1.4/D1.4M: 2011 Structural Welding Code—Reinforcing Steel, 2011.

(ii) [Reserved]

(e) The FHWA supports using, as design resources to achieve context sensitive designs, guides that national organizations develop from peer-reviewed research, or equivalent guides that are developed in cooperation with State or local officials, when such guides are not in conflict with Federal laws and regulations.

Title 23 United States Code, Section 109, Standards

Section 109 states:

(a) In General.—The Secretary shall ensure that the plans and specifications for each proposed highway project under this chapter provide for a facility that will—

(1) adequately serve the existing and planned future traffic of the highway in a manner that is conducive to safety, durability, and economy of maintenance; and

(2) be designed and constructed in accordance with criteria best suited to accomplish the objectives described in paragraph (1) and to conform to the particular needs of each locality.

(b) The geometric and construction standards to be adopted for the Interstate System shall be those approved by the Secretary in cooperation with the State transportation departments. Such standards, as applied to each actual construction project, shall be adequate to enable such project to accommodate the types and volumes of traffic anticipated for such project for the twenty-year period commencing on the date of approval by the Secretary, under section 106 of this title, of the plans, specifications, and estimates for actual construction of such project. Such standards shall in all cases provide for at least four lanes of traffic. The right-of-way width of the Interstate System shall be adequate to permit construction of projects on the Interstate System to such standards. The Secretary shall apply such standards uniformly throughout all the States.

(c) Design Criteria for National Highway System.—

(1) In general.—A design for new construction, reconstruction, resurfacing (except for maintenance resurfacing), restoration, or rehabilitation of a highway on the National Highway System (other than a highway also on the Interstate System) shall consider, in addition to the criteria described in subsection (a)—

(A) the constructed and natural environment of the area;

(B) the environmental, scenic, aesthetic, historic, community, and preservation impacts of the activity;

(C) cost savings by utilizing flexibility that exists in current design guidance and regulations; and

(D) access for other modes of transportation.

(2) Development of criteria.—The Secretary, in cooperation with State transportation departments, may develop criteria to implement paragraph (1). In developing criteria under this paragraph, the Secretary shall consider—

(A) the results of the committee process of the American Association of State Highway and Transportation Officials as used in adopting and publishing "A Policy on Geometric Design of Highways and Streets", including comments submitted by interested parties as part of such process;

(B) the publication entitled "Flexibility in Highway Design" of the Federal Highway Administration;

(C) "Eight Characteristics of Process to Yield Excellence and the Seven Qualities of Excellence in Transportation Design" developed by the conference held during 1998 entitled "Thinking Beyond the Pavement National Workshop on Integrating Highway Development with Communities and the Environment while Maintaining Safety and Performance";

(D) the publication entitled "Highway Safety Manual" of the American Association of State Highway and Transportation Officials;

(E) the publication entitled "Urban Street Design Guide" of the National Association of City Transportation Officials; and

(F) any other material that the Secretary determines to be appropriate.

(d) On any highway project in which Federal funds hereafter participate, or on any such project constructed since December 20, 1944, the location, form and character of informational, regulatory and warning signs, curb and pavement or other markings, and traffic signals installed or placed by any public authority or other agency, shall be subject to the approval of the State transportation department with the concurrence of the Secretary, who is directed to concur only in such installations as will promote the safe and efficient utilization of the highways.

(e) Installation of Safety Devices.—

(1) Highway and railroad grade crossings and drawbridges.—No funds shall be approved for expenditure on any Federal-aid highway, or highway affected under chapter 2 of this title, unless proper safety protective devices complying with safety standards determined by the Secretary at that time as being adequate shall be installed or be in operation at any highway and railroad grade crossing or drawbridge on that portion of the highway with respect to which such expenditures are to be made.

(2) Temporary traffic control devices.—No funds shall be approved for expenditure on any Federal-aid highway, or highway affected under chapter 2, unless proper temporary traffic control devices to improve safety in work zones will be installed and maintained during construction, utility, and maintenance operations on that portion of the highway with respect to which such expenditures are to be made. Installation and maintenance of the devices shall be in accordance with the Manual on Uniform Traffic Control Devices.

(f) The Secretary shall not, as a condition precedent to his approval under section 106 of this title, require any State to acquire title to, or control of, any marginal land along the proposed highway in addition to that reasonably necessary for road surfaces, median strips, bikeways, pedestrian walkways, gutters, ditches, and side slopes, and of sufficient width to provide service roads for adjacent property to permit safe access at controlled locations in order to expedite traffic, promote safety, and minimize roadside parking.

(g) Not later than January 30, 1971, the Secretary shall issue guidelines for minimizing possible soil erosion from highway construction. Such guidelines shall apply to all proposed projects with respect to which plans, specifications, and estimates are approved by the Secretary after the issuance of such guidelines.

(h) Not later than July 1, 1972, the Secretary, after consultation with appropriate Federal and State officials, shall submit to Congress, and not later than 90 days after such submission, promulgate guidelines designed to assure that possible adverse economic, social, and environmental effects relating to any proposed project on any Federal-aid system have been fully considered in developing such project, and that the final decisions on the project are made in the best overall public interest, taking into consideration the need for fast, safe and efficient transportation, public services, and the costs of eliminating or minimizing such adverse effects and the following:

(1) air, noise, and water pollution;

(2) destruction or disruption of man-made and natural resources, aesthetic values, community cohesion and the availability of public facilities and services;

(3) adverse employment effects, and tax and property value losses;

(4) injurious displacement of people, businesses and farms; and

(5) disruption of desirable community and regional growth.

Such guidelines shall apply to all proposed projects with respect to which plans, specifications, and estimates are approved by the Secretary after the issuance of such guidelines.

(i) The Secretary, after consultation with appropriate Federal, State, and local officials, shall develop and promulgate standards for highway noise levels compatible with different land uses and after July 1, 1972, shall not approve plans and specifications for any proposed project on any Federal-aid system for which location approval has not yet been secured unless he determines that such plans and specifications include adequate measures to implement the appropriate noise level standards. The Secretary, after consultation with the Administrator of the Environmental Protection Agency and appropriate Federal, State, and local officials, may promulgate standards for the control of highway noise levels for highways on any Federal-aid system for which project approval has been secured prior to July 1, 1972. The Secretary may approve any project on a Federal-aid system to which noise-level standards are made applicable under the preceding sentence for the purpose of carrying out such standards. Such project may include, but is not limited to, the acquisition of additional rights-of-way, the construction of physical barriers, and landscaping. Sums apportioned for the Federal-aid system on which such project will be located shall be available to finance the Federal share of such project. Such project shall be deemed a highway project for all purposes of this title.

(j) The Secretary, after consultation with the Administrator of the Environmental Protection Agency, shall develop and promulgate guidelines to

assure that highways constructed pursuant to this title are consistent with any approved plan for—

(1) the implementation of a national ambient air quality standard for each pollutant for which an area is designated as a nonattainment area under section 107(d) of the Clean Air Act (42 U.S.C. 7407(d)); or

(2) the maintenance of a national ambient air quality standard in an area that was designated as a nonattainment area but that was later redesignated by the Administrator as an attainment area for the standard and that is required to develop a maintenance plan under section 175A of the Clean Air Act (42 U.S.C. 7505a).

(k) The Secretary shall not approve any project involving approaches to a bridge under this title, if such project and bridge will significantly affect the traffic volume and the highway system of a contiguous State without first taking into full consideration the views of that State.

(l)(1) In determining whether any right-of-way on any Federal-aid highway should be used for accommodating any utility facility, the Secretary shall—

(A) first ascertain the effect such use will have on highway and traffic safety, since in no case shall any use be authorized or otherwise permitted, under this or any other provision of law, which would adversely affect safety;

(B) evaluate the direct and indirect environmental and economic effects of any loss of productive agricultural land or any impairment of the productivity of any agricultural land which would result from the disapproval of the use of such right-of-way for the accommodation of such utility facility; and

(C) consider such environmental and economic effects together with any interference with or impairment of the use of the highway in such right-of-way which would result from the use of such right-of-way for the accommodation of such utility facility.

(2) For the purpose of this subsection—

(A) the term “utility facility” means any privately, publicly, or cooperatively owned line, facility, or system for producing, transmitting, or distributing communications, power, electricity, light, heat, gas, oil, crude products, water, steam, waste, storm water not connected with highway drainage, or any other similar commodity, including any fire or police signal system or street lighting system, which directly or indirectly serves the public; and

(B) the term “right-of-way” means any real property, or interest therein, acquired, dedicated, or reserved for the construction, operation, and maintenance of a highway.

(m) Protection of Nonmotorized Transportation Traffic.—The Secretary shall not approve any project or take any regulatory action under this title that will result in the severance of an existing major route or have significant adverse impact on the safety for nonmotorized transportation traffic and light motorcycles, unless such project or regulatory action provides for a reasonable alternate route or such a route exists.

(n) It is the intent of Congress that any project for resurfacing, restoring, or rehabilitating any highway, other than a highway access to which is fully controlled, in which Federal funds participate shall be constructed in accordance with standards to preserve and extend the service life of highways and enhance highway safety.

(o) Compliance With State Laws for Non-NHS Projects.—Projects (other than highway projects on the National Highway System) shall be designed, constructed, operated, and maintained in accordance with State laws, regulations, directives, safety standards, design standards, and construction standards.

(p) Scenic and Historic Values.—Notwithstanding subsections (b) and (c), the Secretary may approve a project for the National Highway System if the project is designed to—

(1) allow for the preservation of environmental, scenic, or historic values;

(2) ensure safe use of the facility; and

(3) comply with subsection (a).

(q) Phase Construction.—Safety considerations for a project under this title may be met by phase construction consistent with the operative safety management system established in accordance with a statewide transportation improvement program approved by the Secretary.

(r) Pavement Markings.—The Secretary shall not approve any pavement markings project that includes the use of glass beads containing more than 200 parts per million of arsenic or lead, as determined in accordance with Environmental Protection Agency testing methods 3052, 6010B, or 6010C.

ARTICLE 3 Policies

Federal Highway Administration Delegation

The responsibility for approving deviation from design standards has been delegated to Caltrans from FHWA except when formal FHWA approval may be required related to the 10 controlling criteria when the project is identified as one of the

"Projects of Division Interest" as outlined in the latest *Stewardship and Oversight Agreement on Project Assumption and Program Oversight* between the FHWA, California Division and Caltrans. See Chapter 8 – Overview of Project Development and *Highway Design Manual* Chapter 80 "Application of Design Standards" for more information.

Approval has not been delegated for projects that do not provide or maintain a minimum vertical clearance over the Department of Defense Rural and Single Interstate Route System.

Caltrans Delegation

The responsibility for approval of deviation from design standards on the State Highway System and local facilities within State right-of-way rests with the Headquarters Division of Design Division Chief.

The Headquarters Division of Design is responsible for the design standards in *Highway Design Manual*, Topic 82 "Application of Design Standards." The Headquarters Division of Design Chief has delegated approval authority for deviation from the design standards as follows:

- Table 82.1A "Boldface Standards" – approval authority is the Headquarters Project Delivery Coordinator, except as noted in Table 82.1A, where:
  - the approval authority has been delegated to the District Director.
  - the approval authority for the standards in *Highway Design Manual* Chapters 600 – 670 "Pavement Engineering" has been delegated to the State Pavement Engineer.
- Table 82.1B "Underlined Standards" – approval authority is the District Director.

Caltrans has delegated the responsibility for approval for local Federal-aid projects, not on the State Highway System, to the public works director or the city or county engineer if the public works director is not a registered civil engineer.

Delegated Approval Authority

The Headquarters Division of Design has delegated authority for approval of certain design decisions to the District Directors. District-specific delegated responsibilities may be determined from the delegation agreements located at the *Design Stewardship Delegation* website. The design delegation agreements define further delegations

within each district and the delegated authority for each of the specific approval responsibilities.

If the District Director is not a registered civil engineer, written delegation to the district or region manager whose responsibilities include the design function is required.

District Policy

Each district formalizes its own procedures for reviewing, documenting, and approving design standard decision documents. The district process should be similar to the process outlined in Article 4 "Essential Procedures." The design standard decision document template in Appendix BB – Design Standard Decision Documentation is set up to process combined approvals for deviation from multiple design standards where the approval authority belongs to the Headquarters Project Delivery Coordinator for some of the nonstandard design features and the District Director for others. The district may prepare separate design standard decision documents and the district can decide the format and content of the document used for the design standards with delegated approval authority.

Dispute Resolution Process

Occasionally, there may be disagreements between the district and the Headquarters Project Delivery Coordinator on the proper course of action. When disagreements cannot be resolved, the parties must follow the dispute resolution process described in Chapter 2 – Roles and Responsibilities, Section 1 "Headquarters Division of Design."

Integration with Project Development Process

District approval of project initiation documents (PIDs) and project approval documents must follow the conditions outlined in this sub-article.

The Headquarters Project Delivery Coordinator is the approval authority for altering the standard practice as outlined in this sub-article, as context warrants.

Standard Practice

Each alternative must be geometrically feasible in the project initiation document and project approval document except for certain situations as provided for in this sub-article.

A discussion of design standards must be included in the project initiation document and project approval document. For alternatives meeting all standards, a statement of this should be included in the report. When an alternative proposes a new nonstandard design feature or perpetuates an existing nonstandard feature, the report must include: a brief description and discussion of issues related to the nonstandard feature, and a reference to all approved design standard decision documents that includes the approval authority and date.

The design standards risk assessment table is the method to document deferral of design standard decision document approval. The table must be included in the appropriate report and the risk for obtaining an approved design standard decision document must be in the project's risk register. The project engineer lists the design standards likely to not be met for each alternative. The Headquarters Project Delivery Coordinator and/or district approval authority provides the rating and justification for the design standards risk assessment and summary language for the discussion in the project development report.

Project Initiation Document

For projects with only one Build Alternative, approval of the design standard decision document may be deferred to the PA&ED phase if information during the PID phase is insufficient. Document by including in the design standards risk assessment table in the PID that the appropriate approval authority concurs with the decision to delay preparation of the design standard decision document. The standard practice as outlined in the sub-article above for deferral must be followed.

When the decision to pursue approval of the design standard decision document before approval of the PID occurs on projects with only one Build Alternative, the standard practice as outlined in the sub-article above must be followed. Single Build Alternative projects meeting all standards should include a statement of this in the report.

For a project with multiple build alternatives, it is expected that one alternative will be geometrically feasible and the other alternatives use the design standards risk assessment when design standards are not met.

- Project Study Report - Project Development Support Only

The design standard decision document is not required for the PSR-PDS project initiation document. However, there must be a discussion whether each alternative proposes nonstandard design features or perpetuates existing

nonstandard features. Alternatives should be discussed with the Headquarters Project Delivery Coordinator early in the project initiation process to identify potential nonstandard features. Alternatives with insufficient information for design standard decision document development must go through a design standards risk assessment to indicate a level of risk for conceptual acceptability of the alternative.

Draft Project Report

For projects with only one Build Alternative, the design standard decision document must be approved before approval of the draft project report (DPR) or any other type report serving the purpose of a DPR.

For projects with multiple build alternatives, the alternatives with proposed nonstandard design features must go through a design standards risk assessment to indicate the level of risk associated with the probability of approval for each potential deviation from a design standard. Based on the associated risks and consideration of any approved design standard decision documents, the District Director can then decide if approval of the design standard decision document should be pursued for specific alternatives to level the engineering risk prior to approval of the DPR.

Project Report

The design standard decision document must be approved before approval of the project report (PR) or any other project approval document.

Plans, Specifications, and Estimate

If the need for a nonstandard design feature is determined after approval of the project approval document, the design standard decision document should be approved prior to milestone M377 PS&E to DOE and must be approved before milestone M380 Project PS&E.

Construction

During the construction phase of a project, it is the resident engineer's responsibility to ensure that proposed changes to the design meet design standards or have an approved design standard decision document for nonstandard features. It is the project engineer's responsibility to review proposed changes and prepare and secure approval of the design standard decision document for proposed nonstandard features. Nonstandard features discovered during construction must have an approved design standard decision document before the feature is constructed. A design standard

decision document will not be considered for nonstandard features after they are constructed. If nonstandard features are constructed based on the contract plans, the project engineer is responsible for resolving the issue so the features meet standards. If nonstandard features are constructed not based on the contract plans, the resident engineer is responsible for resolving the issue so the features meet standards. When issues arise, all appropriate parties need to be involved so timely decisions can be made to minimize the impact to the construction schedule.

Miscellaneous Requirements

- When nonstandard design features are proposed by an encroachment permit applicant, the design standard decision document is prepared by the applicant's registered civil engineer. The Caltrans functional unit responsible for preparation of the permit engineering evaluation report (PEER) will facilitate the coordination with the Headquarters Project Delivery Coordinator for draft design standard decision document review. If a PEER is not required, the design standard decision document processing will be facilitated by the functional unit assisting the district permit engineer.
- A single design standard decision document may discuss multiple nonstandard design features.
- Nonstandard design features identified after approval of a design standard decision document require the preparation of a supplemental design standard decision document. The prior approved nonstandard design features should be enumerated in the supplemental design standard decision document.
- The design standard decision document should not be attached to any project initiation document, project approval document, or engineering report; it should be summarized and referenced in reports as appropriate.
- Approval of nonstandard design features for projects on the National Highway System, including the Interstate System, is a federal administration action that requires compliance with the National Environmental Policy Act (NEPA). Caltrans has developed a "blanket" categorical exclusion for NEPA compliance when approval of nonstandard design features is the only relevant federal action on the project. See the *Categorical Exclusion Memorandum* from the Division of Environmental Analysis for more information.
- Commitments for future work should not be made in the design standard decision document. If a commitment must be made, a follow-up project is to be programmed and Caltrans must have the authority to define the scope of the project to include the commitment. Additionally, the justification for the commitment must be discussed in the appropriate project development report. The district is responsible for minimizing future commitments, monitoring those commitments, determining if prior commitments were made, and documenting commitments made in a design standard decision document.

Vertical Clearance on Department of Defense Rural and Single Interstate Route System

In coordination with the Department of Defense, the FHWA has identified a subset of the Interstate System composed of all rural Interstates and a single Interstate route in urban areas that would meet the most urgent national defense needs. Those routes shown and described in *Highway Design Manual* Figure 309.2 "Department of Defense Rural and Single Interstate Routes" and Table 309.2B "California Routes on the Rural and Single Interstate Routing System" are given special attention regarding minimum vertical clearance.

The FHWA has made a commitment to the Department of Defense to maintain a 16-foot minimum vertical clearance where it already exists and to upgrade clearances less than 16 feet as rapidly as is practical. Any project on this system (including resurfacing, restoration, and rehabilitation [RRR] projects) will be closely scrutinized to ensure compliance with this vertical clearance standard; approval of nonstandard vertical clearance will be difficult to obtain, and will be subject to additional federal review.

Requests for nonstandard vertical clearance over any Interstate route part of the Rural and Single Interstate Route System will require internal reviews within Caltrans and the FHWA California Division Office. The FHWA California Division Office must obtain concurrence from the Surface Deployment and Distribution Command Transportation Engineering Agency (SDDCTEA) of the Department of Defense prior to approval. See Article 4 "Essential Procedures" for more information.

Additionally, nonstandard vertical clearances of less than 16 feet over any Interstate route not part of the Rural and Single Interstate Route System will require FHWA and Surface Deployment and Distribution Command Transportation Engineering Agency notification.

ARTICLE 4 Essential Procedures

Consultation Requirements

Potential nonstandard design features must be discussed with the Headquarters Project Delivery Coordinator and/or the district approval authority, designated by the District Director, as soon as the need is identified.

Potential nonstandard design features may need to be discussed with the appropriate FHWA transportation engineer, depending on the level of FHWA oversight and depending on the location of proposed nonstandard vertical clearance on the Interstate System.

Requests for Nonstandard Design Feature Approval

After the Headquarters Project Delivery Coordinator and/or district approval authority determines there may be sufficient justification to evaluate an existing or proposed nonstandard design feature, these steps must be taken:

1. Prepare the draft design standard decision document in conformance with the outline in Appendix BB – Design Standard Decision Documentation.
2. Submit the draft design standard decision document to the appropriate approval authority for review.
3. Resolve all comments to the satisfaction of the appropriate approval authority.
4. Circulate the design standard decision document for approval signatures. See Sub-article "Approvals" near the end of this article.

If the Headquarters Project Delivery Coordinator and/or district approval authority identifies significant changes to the conditions that originally supported the use of a nonstandard design feature when the design standard decision document was approved, they may determine that the changed conditions invalidate the previous justification that supported the use of the nonstandard design feature. Consult with the delegated approval authority of the changed design feature to determine the course of action necessary in documenting the significant changes.

Requests to perpetuate an existing nonstandard feature within a project's work limits will be made in accordance with the procedures in this sub-article unless the Headquarters Project Delivery Coordinator and/or district approval authority determines that it should be documented in the project approval document or with a memorandum to file placed in the project history file.

Vertical Clearance on Department of Defense Rural and Single Interstate Route System

Requests for approval of vertical clearances of less than 16 feet over any portion of this system must be processed separately with a design standard decision document. See Appendix BB – Design Standard Decision Documentation for the appropriate

format. Information on the detail required for the submittal is located at the *FHWA Design Standards* website.

The requests will receive internal reviews within Caltrans and the FHWA California Division Office. The FHWA California Division Office must obtain concurrence from the Surface Deployment and Distribution Command Transportation Engineering Agency of the Department of Defense prior to approval. Due to this additional and lengthy step, potential nonstandard vertical clearance must be identified and discussed with the Headquarters Project Delivery Coordinator early in the process.

The project engineer will submit the design standard decision document to the FHWA California Division Office after approval has been obtained from the Headquarters Project Delivery Coordinator. The transmittal should note whether additional nonstandard design features on the proposed project are anticipated.

Approvals

The necessary approvals are summarized in Figure 21-1.

Signature, Coversheet Format

The outline in Appendix BB – Design Standard Decision Documentation provides a recommended format for the signature/cover sheet. The format may be varied to suit each district's organization; however, each design standard decision document must comply with the requirements of Chapter 2 – Roles and Responsibilities, Section 9 "Signatures on Technical Reports."

Caltrans Approval

Caltrans approval for deviation from design standards is required for all projects on the State Highway System. Caltrans approval must precede any required approvals from FHWA.

FHWA Approval

Formal FHWA approval may be required for deviation from design standards related to the 10 controlling criteria when the project is identified as one of the "Projects of Division Interest" as outlined in the latest *Stewardship and Oversight Agreement on Project Assumption and Program Oversight* between the FHWA, California Division and Caltrans. See Chapter 8 – Overview of Project Development and *Highway Design Manual* Chapter 80 "Application of Design Standards" for more information.

Separate FHWA approval is also required for any project that does not provide or maintain a minimum vertical clearance over the Department of Defense Rural and Single Interstate Route System.

Requests for FHWA approval or special notification should be made by letter, addressed to the FHWA division administrator, and signed by the District Director or a District Division Chief. Requests must include a copy of the approved design standard decision document.

Figure 21-1 Requirements for Approval

<table>
<tr><th></th><th>Interstate</th><th colspan="2">Non-Interstate</th></tr>
<tr><th></th><th>NHS</th><th>NHS</th><th>Non-NHS</th></tr>
<tr><td>FHWA 10 Controlling Criteria</td><td>1) CT DOD Approval [1]
2) FHWA Approval [2]

Note: Numbered steps imply sequential processing.</td><td colspan="2">CT DOD Approval for State Highways

Local Agency Approval for Non-State Highways</td></tr>
<tr><td>Vertical Clearance on Rural and Single Interstate Route System</td><td>1) CT DOD Approval [1]
2) FHWA Approval
3) SDDCTEA Concurrence Facilitated by FHWA
4) FHWA Final Approval

Note: Numbered steps imply sequential processing.</td><td colspan="2">N/A</td></tr>
<tr><td>All other Design Standards</td><td>CT DOD Approval or CT DD Approval [1]</td><td colspan="2">CT DOD Approval or CT DD Approval [1] for State Highways

Local Agency Approval for Non-State Highways</td></tr>
</table>

CT – Department of Transportation (Caltrans)
DD – District Director
DOD – Division of Design
FHWA – Federal Highway Administration
NHS – National Highway System
SDDCTEA – Surface Deployment and Distribution Command Transportation Engineering Agency (Department of Defense)
[1] – For design standards where the approval is delegated to the District Director, all requirements remain the same except that "CT DOD Approval" is replaced by "CT DD Approval." See Article 3 "Policies" for conditions on delegation to District Directors.
[2] – FHWA approval may be required, see "FHWA Approval" heading in Article 4 "Essential Procedures."

Filing

After final approval is obtained, the project engineer or designee in accordance with district procedures must upload the approved design standard decision document with any correspondence between the district and the FHWA, into the statewide Document Retrieval System (DRS). The project engineer must provide written notification of the upload into the Document Retrieval System to the Headquarters Project Delivery Coordinator and/or district approval authority; notification by email is sufficient.

The signed original design standard decision document with any FHWA correspondence must be filed in the project history file. A backup copy should be filed in a separate permanent file or in the district's central file. The Document Retrieval System can serve as the separate permanent file.